

CLAIMS

1. (Currently amended) A low Intermediate Frequency ('IF') radio receiver comprising:

antenna means for receiving a slot-based radio signal at a carrier frequency and comprising successive frames each comprising a set of reception time slots;

input means responsive to a signal from said antenna means for producing an input signal;

local oscillator means for producing at least one local oscillator signal having a local oscillator frequency;

mixer means for mixing said input signal with said local oscillator signal and producing an IF signal; and

filter means responsive to said IF signal for selectively passing frequencies within a low IF range and rejecting frequencies outside said low IF range so as to produce a filtered signal, ~~characterised in that~~wherein said local oscillator means includes frequency alternation means for causing said local oscillator frequency to alternate relative to said carrier frequency a plurality of times during said reception time slots of each of said frames between first and second values one of which is greater and the other smaller than ~~the desired~~said carrier frequency ~~of the input signal~~.

2. (Currently amended) A low IF radio receiver as claimed in claim 1, comprising:

further local oscillator means for producing at least one further local oscillator signal having a further local oscillator frequency;

further mixer means for mixing said filtered signal with said further local oscillator signal and producing a baseband signal; and

baseband filter means responsive to said baseband signal for selectively passing frequencies within a baseband frequency range and rejecting frequencies outside said baseband range.

3. (Currently amended) A low IF radio receiver as claimed in claim 1, wherein said local oscillator means comprises ~~'I'~~I and ~~'Q'~~Q channels for producing respectively I and Q components of said local oscillator signal ~~in phase quadrature~~, said mixer means includes I

and Q mixer channels for mixing said input signal with said I and Q components of said local oscillator signal and producing respectively I and Q components of said IF signal, and said filter means includes I and Q filter channels for producing I and Q components of said filtered signal, respectively.

4. (Currently amended) A low IF radio receiver as claimed in claim 3, comprising:

further local oscillator means for producing I and Q further local oscillator signal components having a further local oscillator frequency, further mixer means including I and Q further mixer channels for mixing said filtered signal with said I and Q further local oscillator signal components and producing I and Q components of said baseband signal; and

I and Q baseband filter means responsive to said I and Q components of said baseband signal for selectively passing frequencies within a baseband frequency range and rejecting frequencies outside said baseband range so as to produce I and Q components of said baseband signal, respectively.

5. (Currently amended) A low IF radio receiver ~~as claimed in claim 4~~ comprising:

antenna means for receiving a slot-based radio signal and comprising successive frames each comprising a set of reception time slots;

input means responsive to a signal from said antenna means for producing an input signal;

local oscillator means for producing at least one local oscillator signal having a local oscillator frequency, wherein said local oscillator means comprises I and Q channels for producing respectively I and Q components of said local oscillator signal;

mixer means for mixing said input signal with said local oscillator signal and producing an IF signal, wherein said mixer means includes I and Q mixer channels for mixing said input signal with said I and Q components of said local oscillator signal and producing respectively I and Q components of said IF signal;

filter means responsive to said IF signal for selectively passing frequencies within a low IF range and rejecting frequencies outside said low IF range so as to produce

a filtered signal, wherein said filter means includes I and Q filter channels for producing I and Q components of said filtered signal, respectively;

further local oscillator means for producing I and Q further local oscillator signal components having a further local oscillator frequency;

further mixer means including I and Q further mixer channels for mixing said filtered signal with said I and Q further local oscillator signal components and producing I and Q components of said baseband signal; and

I and Q baseband filter means responsive to said I and Q components of said baseband signal for selectively passing frequencies within a baseband frequency range and rejecting frequencies outside said baseband range so as to produce I and Q components of said baseband signal, respectively.

wherein said local oscillator means includes frequency alternation means for causing said local oscillator frequency to alternate a plurality of times during said reception time slots of each of said frames between first and second values one of which is greater and the other smaller than the desired carrier frequency of the input signal; and

wherein said further local oscillator means includes phase alternation means for applying alternating phase shifts to said I and Q further local oscillator signal components in synchronism with said local oscillator frequency alternations.

6. (Previously presented) A low IF radio receiver as claimed in claim 5, wherein said phase alternation means is arranged to alternate said I and Q further local oscillator signal components between said I and Q further mixer channels in synchronism with said local oscillator frequency alternations.
7. (Previously presented) A low IF radio receiver as claimed in claim 1, wherein said frequency alternation means is arranged to alternate said local oscillator frequency between said first and second values at each successive reception time slot of each of said frames.
8. (Currently amended) A low Intermediate Frequency ('IF') radio receiver comprising:
 - an antenna for receiving a slot-based radio signal at a carrier frequency and comprising successive frames each comprising a set of reception time slots;
 - an input responsive to a signal from said antenna for producing an input signal;

~~a~~at least one local oscillator for producing at least one local oscillator signal having a local oscillator frequency;

~~a~~at least one mixer for mixing said input signal with said local oscillator signal and producing an IF signal; and

~~a~~at least one filter responsive to said IF signal for selectively passing frequencies within a low IF range and rejecting frequencies outside said low IF range so as to produce a filtered signal ~~characterised in that~~wherein said local oscillator includes frequency alternation circuit for causing said local oscillator frequency to alternate relative to said carrier frequency a plurality of times during said reception time slots of each of said frames between first and second values one of which is greater and the other smaller than ~~the desired~~said carrier frequency ~~of the input signal~~.

9. (Currently amended) A low IF radio receiver as claimed in claim 8, comprising:

~~a~~at least one second local oscillator for producing at least one further local oscillator signal having a further local oscillator frequency;

~~a~~at least one second mixer for mixing said filtered signal with said further local oscillator signal and producing a baseband signal; and

~~a~~at least one second filter responsive to said baseband signal for selectively passing frequencies within a baseband frequency range and rejecting frequencies outside said baseband range.

10. (Currently amended) A low IF radio receiver as claimed in claim 8, wherein said local oscillator comprises ~~T-I~~I and ~~Q-Q~~Q channels for producing respectively I and Q components of said local oscillator signal in phase quadrature, said mixer includes I and Q mixer channels for mixing said input signal with said I and Q components of said local oscillator signal and producing respectively I and Q components of said IF signal, and said filter includes I and Q filter channels for producing I and Q components of said filtered signal, respectively.

11. (Currently amended) A low IF radio receiver as claimed in claim 10, comprising:

a second local oscillator for producing I and Q further local oscillator signal components having a further local oscillator frequency;

a second mixer including I and Q further mixer channels for mixing said filtered signal with said I and Q further local oscillator signal components and producing I and Q components of said baseband signal; and

~~an I and Q~~ a second filter including I and Q further filter channels responsive to said I and Q components of said baseband signal for selectively passing frequencies within a baseband frequency range and rejecting frequencies outside said baseband range so as to produce I and Q components of said baseband signal, respectively.

12. (Currently amended) A low IF radio receiver ~~as claimed in claim 11, wherein comprising:~~

an antenna for receiving a slot-based radio signal at a carrier frequency and comprising successive frames each comprising a set of reception time slots;

an input responsive to a signal from said antenna for producing an input signal;

at least one local oscillator for producing at least one local oscillator signal having a local oscillator frequency, wherein said local oscillator comprises I and Q channels for producing respectively I and Q components of said local oscillator signal in phase quadrature;

at least one mixer for mixing said input signal with said local oscillator signal and producing an IF signal, wherein said mixer includes I and Q mixer channels for mixing said input signal with said I and Q components of said local oscillator signal and producing respectively I and Q components of said IF signal; and

at least one filter responsive to said IF signal for selectively passing frequencies within a low IF range and rejecting frequencies outside said low IF range so as to produce a filtered signal wherein said local oscillator includes frequency alternation circuit for causing said local oscillator frequency to alternate relative to said carrier frequency a plurality of times during said reception time slots of each of said frames between first and second values one of which is greater and the other smaller than said carrier frequency, wherein said filter includes I and Q filter channels for producing I and Q components of said filtered signal, respectively.

a second local oscillator for producing I and Q further local oscillator signal components having a further local oscillator frequency;

a second mixer including I and Q further mixer channels for mixing said filtered signal with said I and Q further local oscillator signal components and producing I and Q components of said baseband signal; and

a second filter including I and Q further filter channels responsive to said I and Q components of said baseband signal for selectively passing frequencies within a baseband frequency range and rejecting frequencies outside said baseband range so as to produce I and Q components of said baseband signal, respectively;

wherein said second local oscillator includes a phase alternation circuit for applying alternating phase shifts to said I and Q further local oscillator signal components in synchronism with said local oscillator frequency alternations.

13. (Previously presented) A low IF radio receiver as claimed in claim 12, wherein said phase alternation circuit is arranged to alternate said I and Q further local oscillator signal components between said I and Q further mixer channels in synchronism with said local oscillator frequency alternations.
14. (Previously presented) A low IF radio receiver as claimed in claim 8, wherein said frequency alternation circuits are arranged to alternate said local oscillator frequency between said first and second values at each successive reception time slot of each of said frames.
15. (New) A low IF radio receiver as claimed in claim 1, wherein said local oscillator frequency is arranged to alternate between first and second values one of which is greater and the other smaller than said carrier frequency by the same frequency difference.
16. (New) A low IF radio receiver as claimed in claim 8, wherein said local oscillator frequency is arranged to alternate between first and second values one of which is greater and the other smaller than said carrier frequency by the same frequency difference.